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SUBSTITUTE SPECIFICATION

Patent Application of

Marvin Byrd

For

RECEIVED

FEB 04 2004

GROUP 3600

7 **TITLE: COMPANION RIDER WHEEL CHAIR**

8

9 **BACKGROUND & CROSS REFERENCES TO RELATED APPLICATIONS**

10 This application is entitled to benefit of Provisional Patent Application Serial
11 Number 60/263,496 filed on January 23, 2001.

12

13 **FEDERALLY SPONSORED RESEARCH**

14 The invention that is the subject matter of the present application was not a
15 recipient of any federal support for its research and development.

16

17 **REFERENCE TO MICROFICHE APPLICATION**

18 Not applicable

19

20 **BACKGROUND OF THE INVENTION**

21 This invention relates to the field of wheel chair devices that are used by the
22 physically challenged for movement and convenience.

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3 Most wheelchairs that are found in the market are custom made to fit a particular
4 person, with specific height and width dimensioned to suit the physical configuration of
5 the future user of the wheelchair. Furthermore, wheelchairs found in the prior art are
6 relatively bulky and heavy and are not easy to store because of their complicated
7 configuration, such as the cooperative escalator and wheel chair of Patent No. 4,326,622
8 (Ellzey, 1982). With respect to wheelchairs with seats are divided, Patent No. 5,405,187
9 (Söderlund, 1995) describes a wheelchair where the seat is divided longitudinally. With
10 respect to motorized wheelchair devices, they are present in the prior art, such as the
11 motorized invalid chair transport vehicle claimed in Patent No. D320,579 (Manning et al,
12 1991), and in the universal electric wheeled chair described in Patent No. 4,941,540
13 (Bernstein, 1990). Nevertheless, no prior art neither of lighter wheelchairs -such as the
14 universal wheeled chair claimed in Patent 4,825,971 (Bernstein, 1989)- or of motorized
15 wheelchair describe the use of a coupling devise to allow a standard wheelchair to be
16 coupled to a motorized devise.

17 With respect to devices to hold the two members together when used as
18 companion rider wheelchair, there are locks in the prior art such as the self locking, rattle
19 resistant fork bolt described in Patent No. 6,022,166 (Rogers et al, 2000), but do not
20 claim nor disclose the system used in the present invention.

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22 **BRIEF SUMMARY OF THE INVENTION**

1 This invention constitutes a lightweight wheeled chair forming a companion rider
2 device formed of hollow tubular frame members. The seat is preferably cantilevered from
3 rear frame members. The frame includes two lower side frame members, each of which
4 has wheels mounted at both ends. In one embodiment the front of the two lower side
5 members are coupled together using two coupling frame members inter-coupling the
6 upper side and lower side frame members to permit adjustment and collapsing of the
7 wheeled chair. Two upper side members extend forwardly from the rear of the wheeled
8 chair, and are secured to the rear frame members. A seat may be supported directly on
9 these two upper side frame members, or the two upper side frame members may serve as
10 arms for the wheeled chair, with the seat being slung from these arms at a lower position.

11 The present invention is to provide a lightweight wheelchair that can be used as a
12 standalone wheelchair, as well as for a recreational use coupled to a motorized vehicle.

13

14 Advantages of the new wheelchair include the fact that it is very lightweight, with
15 the estimate of its weight being approximately 18 pounds. An additional advantage, of
16 course, is the fact that it may be readily adjusted in height, from kitchen counter-top level
17 to a much lower desk height level. The unit can be constructed to be foldable so that it
18 may easily fit into the back seat or trunk of a car.

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21 In view of the foregoing, various objects of the present invention include the following:

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23 1. One object of the present invention is to provide a lightweight wheelchair that can be

1 used as a standalone wheelchair, as well as for a recreational use coupled to a motorized
2 vehicle, such as a motorized wheel chair.

3 2. Another object of the present invention is to provide a wheelchair in which the width
4 of the wheelchair between the side arms may be readily varied, and wherein the height of
5 the seat of the wheelchair may be easily changed.

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7 BRIEF DESCRIPTION OF THE DRAWINGS

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9 The invention will be more clearly understood after reference to the following detailed
10 description of the preferred embodiment read in conjunction with the drawings, wherein:

11

12 Fig. 1. is a photograph side elevation view of a wheelchair illustrating an early
13 embodiment of the present invention.

14

15 Fig. 2 A Illustrates a perspective view of the adjustable wheel chair with the towing bar
16 device attached to it.

17

18 Fig. 2 B Illustrates a perspective view of the adjustable wheel chair with the castor wheel
19 assemblies attached to it.

20

21 Fig. 3 is a sectional view of the adjustable companion rider wheel chair frame and the
22 attachable towing device.

23

- 1 Fig. 3A illustrates the adjustable chair frame and the towing bar attachment.
- 2
- 3 Fig. 3B illustrates the coupling mechanism.
- 4
- 5 Fig. 3C illustrates the towing bar.
- 6
- 7 Fig. 3D illustrates the castors.
- 8 Fig. 4. illustrates an alternative embodiment of the wheelchair frame.
- 9
- 10 Fig. 5. is a photograph of the invention reduced to practice.
- 11

- 12 **DETAILED DESCRIPTION OF THE INVENTION**

- 13
- 14 In accordance with one aspect of the present invention, a lightweight companion
- 15 rider wheel chair, a frame having two lower side frame members 30, with wheels
- 16 mounted at front end 31 and at rear end 32 thereof, and two rear frame members 33, with
- 17 the lower ends of each of the rear frame members 34 being pivotally secured to the rear
- 18 ends of the lower side frame members 32. In addition, two forwardly extending upper
- 19 side members 35 are provided, with these upper side frame members being mechanically
- 20 secured to the upper ends 36 of the two rear frame members. With regard to the arms and
- 21 seat of the wheeled chair, they may be arranged in one of two alternative ways. As one
- 22 alternative, the forwardly extending upper side members 35 may be the wheelchair arms,
- 23 and the seat may be supported by a sling from these arms. As another alternative, two sets
- 24 of forwardly extending upper frame members 37 may be provided, with the upper pair

1 constituting the arms of the wheeled chair, and the lower pair of forwardly extending
2 frame members constituting the support for the seat. (See Figure 2 A and B). One feature
3 of the invention is that arrangements maybe provided for changing the spacing of the side
4 members, thereby causing the "X" configuration 38 to pivot about their central pivot
5 point and have the arms of the wheelchair come closer or farther apart, and
6 correspondingly raise and lower the height of the seat.)

7

8 The height of the chair can be adjusted by adjusting the attachment of the castor wheels
9 40 and the rear wheels 42. The castors 39 are attachable to the front end of the lower side
10 frame 31 with a coupling mechanism 4, 5. The castor wheels 40 can be attached in any of
11 the several holes 8 provided in the castor wheel attachment 41. The rear wheels 42 can be
12 attached into any of the several holes 6 provided in the lower end of the rear frames 34.

13

14 The rear wheels can furthermore be adjusted depending of the weight of the person sitting
15 in the chair by attaching the back wheels 42, into any of the several holes 7 provided in
16 the rear end of the lower side frames 32.

17

18 In order to use the wheel chair as a companion rider, the castor assemblies 39 are
19 removed and instead a tow bar attachment 1 is attached in the front ends of the lower side
20 frames 31. Alternatively, the tow bar attachment is permanently fixed to the front ends of
21 the lower side frames (see Fig. 4). The rear end 45 of a tow bar 2 is attached to the tow
22 bar attachment 1 with a pin-coupling coupler 46. The tow bar 2 is curved downwardly
23 and the lowest part of the bar forms a rest for the feet 43. The front end of the tow bar 44

1 is coupled to a coupling mechanism 3 in the motorized vehicle with another pin-coupling
2 coupler 47.

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4 Other features of the invention may involve one or more of the following:

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6 1. The front ends of the lower side members may be coupled together with a combination
7 of frame members and linear bearings, to maintain alignment of the lower side frame
8 members.

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10 2. Advantages of the new wheelchair include the fact that it is very lightweight,
11 with the estimate of its weight being approximately 18 pounds.

12 3. An additional advantage, of course, is the fact that it may be readily adjusted in height,
13 from kitchen counter-top level to a much lower desk height level. The unit may be
14 collapsable so that it may easily fit into the back seat or trunk of a car.

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9 The invention is operated by coupling the wheelchair device to a motorized
10 vehicle such as an electric wheelchair or golf cart by means of the pin-coupling device.
11 The rider then can be pulled along for recreational purposes by the motorized vehicle.

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13 The invention can be used as a standalone wheelchair, or as a coupled device to a
14 motorized devise. The wheelchair invention described here is also available as a
15 collapsible device so it can be stored and carried easily and conveniently, such as in the
16 trunk of a car. The alternative embodiments described here are examples only; the scope
17 of the invention shall be as described within the claims of the invention.

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19

20 This device offers a unique device for transport and recreation of those persons
21 requiring the use of a wheelchair for movement. It improves the quality of life of the
22 physically challenged and allows for more mobility in the community at large. The scope

1 of the invention described here is for example only. The scope of the invention shall be
2 determined as described within the claims of the invention.

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